

Physics 341 Electronics Laboratory 2: Capacitors

AUTHORIZED RESOURCES: Any USAFA faculty member, your lab partner(s), any textbook or other published material, your data taken in lab*, any computer software.

* At your instructor's discretion, you may be allowed to use data from another source; however, such use must be approved in advance of the assignment due date.

All material in your notebook is graded work! The neatness and organization of your notebook counts toward your grade.

Pre-lab

- Perform the following analysis using PSpice:

Determine the frequency response of the circuit in Figure L2.4 (p. 56). Drive the input of the circuit with an AC source with an amplitude of 1V. Plot the output amplitude as a function of frequency. Identify the “3dB point” on your plot.

Note that your text defines f_{3dB} as the frequency at which the output amplitude is 70.7% of its maximum value.

In the laboratory

- Perform the tasks described in the following sections of your lab manual, recording your results in your lab notebook:

Section 2-1, RC Circuit, p. 54

Section 2-2, Differentiator, p. 55

Section 2-4, Low-pass Filter, p. 57

Section 2-5, High-pass Filter, p. 57

- Perform the additional following tasks, again using your lab notebook as your record:

No additional tasks for this lab.

For analysis

- In your laboratory notebook, answer all of the questions raised in the sections of the lab manual you used.

- Answer the following additional questions in your laboratory notebook:

No additional questions for this lab.